UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/381,040	10/12/99	LARSEN J	CU-1991TJK

WM02/1010

JOHN J CHRYSTAL
LADAS & PARRY
224 SOUTH MICHIGAN AVENUE
CHICAGO IL 60604

EXAMINER	
DAVIS, T	
ART UNIT	**PAPER NUMBER**
2681	#5

DATE MAILED: 10/10/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

T.R

PTO-90C (Rev. 2/95)
*U.S. GPO: 2000-473-000/44602

1- File Copy

Office Action Summary

Application No.	Applicant(s)
09/381,040	Larsen et al.
Examiner	**Art Unit**
Temica M. Davis	2681

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Oct 12, 1999*

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *23-43* is/are pending in the applica

4a) Of the above, claim(s) _____ is/are withdrawn from considera

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *23-30 and 35-39* is/are rejected.

7) ☒ Claim(s) *31-34 and 40-43* is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirem

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claim 35 is objected to because of the following informalities: In line 6 of claim 35 "vase" should read --base--. Appropriate correction is required.

2. Claim 36 is objected to because of the following informalities: In line 2 of claim 35 "or" should read --to--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 23-25 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Padovani, U.S. Patent No. 5,937,019 and Uratini, GB 2,291,564.

Regarding claim 23, Padovani discloses a method of transmitting data between stations in a cellular wireless communication system comprising a plurality of mobile stations and a plurality of base stations (col. 6, lines 5-8), the method comprising locating a plurality of base stations so that each base station has a zone of effective coverage (i.e. regions located outside of areas 182 and 188; figure 3A) which does not overlap with the zones of effective coverage of

adjacent base stations, thereby defining zones of reduced coverage (i.e. region located between boundaries 182 and 188; figure 3A) between the base stations (col. 10, lines 22-30), and relaying a data message from a sender station (150, 155, 165) to a destination station (150, 155, 165), wherein at least one of the sender station and the destination station is a base station (figure 3A) and wherein the other of said sender station is a mobile station (155) located within a zone of reduced coverage with respect to said base station (figure 3A), so that transmission of the data message from the sender station to the destination station does not interfere with adjacent base stations (col. 10, lines 12-22).

Padovani, however, fails to disclose wherein the message relayed between the mobile and base station is relayed via a relay station (i.e. repeater).

Uratini discloses relaying a message, via a mobile repeater 15(1), between a mobile and a base station from a service area (effective coverage area) to a reduced coverage area (17).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Padovani with the teachings of Uratini for the purpose of ensuring that communications can still be performed between a mobile station and a base station even if the mobile station has moved out of the effective coverage of the base station.

Regarding claim 24, the combination of Padovani and Uratini discloses a method according to claim 23 wherein the destination station is a base station and the sender station is a mobile station located within a zone of reduced coverage with respect to said base station (Padovani, see wireless communication links of figure 3A).

Regarding claim 25, the combination of Padovani and Uratini discloses a method according to claim 24 wherein said at least one relay station is located within the zone of effective coverage of the destination base station (Uratini, page 6, lines 10-14; figure 1).

Regarding claim 35, Padovani discloses a cellular wireless communication system comprising a plurality of mobile stations and a plurality of base stations (col. 6, lines 5-8), each station being able to transmit data to and receive data from other stations and to act as relay stations (figure 3A), the base stations being located so that each base station has a zone of effective coverage (i.e. regions located outside of areas 182 and 188; figure 3A) which does not overlap with the zones of effective coverage of adjacent base stations, thereby defining zones of reduced coverage between the base stations (i.e. region located between boundaries 182 and 188; figure 3A), the system being adapted to relay data messages from a sender station (150, 155, 165) to a destination station (150, 155, 165), wherein at least one of the sender station and the destination station is a base station, and wherein the other of said sender station and said destination station is a mobile station located within a zone of reduced coverage with respect to said base station so that transmission of the data message from the sender station does not interfere with adjacent base stations (col. 10, lines 12-22).

Padovani, however, fails to disclose wherein the message relayed between the mobile and base station is relayed via a relay station (i.e. repeater).

Uratini discloses relaying a message, via a mobile repeater 15(1), between a mobile and a base station from a service area (effective coverage area) to a reduced coverage area (17).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Padovani with the teachings of Uratini for the purpose of ensuring that communications can still be performed between a mobile station and a base station even if the mobile station has moved out of the effective coverage of the base station.

Regarding claim 36, the combination of Padovani and Uratini discloses a communication system according to claim 35 wherein the zones of reduced coverage with respect to each base station are zones in which at least one resource utilized by the base station is reduced (Padovani, col. 11, line 50-col. 12, line 21).

Regarding claim 37, the combination of Padovani and Uratini discloses a communication system according to claim 36 wherein the resources include transmission power, transmission time slots, frequency channels, modulation efficiency and codes (Padovani, col. 11, line 50-col. 12, line 21).

Regarding claim 38, the combination of Padovani and Uratini discloses a communication system according to claim 37 wherein the resources are reduced due to sharing thereof between two or more base stations in respective overlapping zones of reduced coverage of the base stations (col. 11, line 50-col. 12, line 21).

5. Claims 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Padovani, U.S. Patent No. 5,937,019, Uratini, GB 2,291,564 and Cook et al (Cook), U.S. Patent No. 6,005,884.

Regarding claim 26, the combination of Padovani and Uratini discloses a method according to claim 25 as described above.

The combination, however, fails to disclose wherein the data message from the sender station is relayed by at least one further relay station located in a zone of reduced coverage with respect to said destination base station.

Cook reads on this limitation (col. 31, lines 26-33 and col. 33, line 29-44).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the combination of Padovani and Uratini with the teachings of Cook for the purpose of ensuring the message is relayed between the stations even if a failure has occurred with respect to a first repeater.

Regarding claim 27, the combination of Padovani, Uratini and Cook discloses a method according to claim 26 wherein the zones of reduced coverage with respect to each base station are zones in which at least one resource utilized by the base station is reduced (Padovani, col. 11, line 50-col. 12, line 21).

Regarding claim 28, the combination of Padovani, Uratini and Cook discloses a method according to claim 27 wherein the resources include transmission power, transmission time slots, frequency channels, modulation efficiency and codes (Padovani, col. 11, line 50-col. 12, line 21).

Regarding claim 28, the combination of Padovani, Uratini and Cook discloses a method according to claim 28 wherein the resources are reduced due to sharing thereof between two or

more base stations in respective overlapping zones of reduced coverage of the base stations (Padovani, col. 11, line 50-col. 12, line 21).

6. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Padovani, U.S. Patent No. 5,937,019, Uratini, GB 2,291,564, Cook et al (Cook), U.S. Patent No. 6,005,884 and Rautiola, U.S. Patent No. 5,752,197.

Regarding claim 30, the combination of Padovani, Uratini and Cook discloses a method according to claim 29 as described above.

The combination, however, fails to specifically disclose wherein the relay stations adjust their transmission power, when relaying messages to a base station or mobile station in the zone of effective coverage of a base station, to avoid interference with said base station.

Rautiola reads on this limitation (col. 3, lines 8-20, col. 4, lines 25-55).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the combination of Padovani, Uratini and Cook with the teachings of Rautiola for the purpose of ensuring a good quality link between the communication stations.

7. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Padovani, U.S. Patent No. 5,937,019, Uratini, GB 2,291,564 and Rautiola, U.S. Patent No. 5,752,197.

Regarding claim 39, the combination of Padovani and Uratini discloses a communication system according to claim 38 as described above.

The combination, however, fails to disclose wherein the mobile stations are adapted to adjust their transmission power, when relating messages to a base station in the zone of effective coverage of a base station, to avoid interference with said base station.

Rautiola reads on this limitation (col. 3, lines 8-20, col. 4, lines 25-55).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the combination of Padovani, Uratini and Cook with the teachings of Rautiola for the purpose of ensuring a good quality link between the communication stations.

Allowable Subject Matter

8. Claims 31-34 and 40-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, claims 33 and 42 are allowable solely as a result of their dependency from allowable claims 31 and 41, respectively.

9. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 31, prior art fails to suggest or render obvious wherein the relay station adjust their usage of at least one of their transmission slots, frequency channels, modulation efficiency and codes to avoid interference with the base station.

Regarding claim 32, prior art fails to suggest or render obvious wherein the relay stations monitor data transmissions to and from base stations and/or between other mobile stations, and

relay messages opportunistically when said data transmissions are not occurring, thereby sharing resources with other stations.

Regarding claim 34, prior art fails to suggest or render obvious a method according to claim 33 wherein the relay stations monitor data transmission to and from base stations and/or between other mobile stations and relay messages opportunistically, utilizing higher efficiency modulation, when an increased signal to interference ratio is available, to avoid interference with said data transmissions.

Regarding claim 40, prior art fails to suggest or render obvious a communication system according to claim 39 wherein the mobile stations are further adapted to adjust their usage of at least one of their transmission time slots, frequency channels, modulation efficiency and codes to avoid interference with said base station.

Regarding claim 41, prior art fails to suggest or render obvious a communication system according to claim 40 wherein the mobile stations are adapted to monitor data transmissions to and from base stations and/or between other mobile stations, and to relay messages opportunistically when said data transmissions are not occurring, thereby to share resources with other stations.

Regarding claim 43, prior art fails to suggest or render obvious a method according to claim 41 wherein the mobile stations are adapted to monitor data transmission to and from base stations and/or between other mobile stations and to relay messages opportunistically, utilizing

higher efficiency modulation, when an increased signal to interference ratio is available, to avoid interference with said data transmissions.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Agrawal et al, U.S. Patent No. 5,722,051, discloses adaptive power control and coding scheme for mobile radio systems.

Jang, U.S. Patent No. 5,579,373, discloses transmission power control method in cellular system.

Kinoshita, U.S. Patent No. 4,790,000, discloses a portable radio telephone system.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Temica M. Davis whose telephone number is (703) 306-5837. The examiner can normally be reached on Monday-Thursday from 8:30 am to 6:00 pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Dwayne Bost, can be reached on (703) 305-4778.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC2600 customer service whose telephone number is (703)306-0377.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for any communications intended for entry).

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

TMD

Temica M. Davis

September 27, 2001

Tracy Legree

TRACY LEGREE
PRIMARY EXAMINER